

**WHAT IS CLAIMED IS:**

1. An aqueous dispersion of titanium oxide particles comprising chloride ion and at least one kind of Brønsted base selected from the group consisting of pyrophosphate ion, metaphosphate ion, polyphosphate ion, methanesulfonate ion, ethanesulfonate ion, dodecylbenzenesulfonate ion and propanesulfonate ion.
2. The aqueous titanium oxide dispersion as claimed in claim 6, wherein the Brønsted base is at least one kind of ion selected from nitrate ion, phosphate ion, pyrophosphate ion, metaphosphate ion, polyphosphate ion, acetate ion and an organic acid ion.
3. The aqueous titanium oxide dispersion as claimed in claim 6, wherein the Brønsted base comprises either one or both of nitrate ion and phosphate ion.
4. The aqueous titanium oxide dispersion as claimed in claim 1, wherein the content of chloride ion and the Brønsted base is in the range of 50 ppm to 10,000 ppm as the total anion content in the aqueous titanium oxide dispersion.
5. The aqueous titanium oxide dispersion as claimed in claim 1 or claim 4, wherein the titanium oxide particles have an average particle diameter of from 0.01  $\mu\text{m}$  to 0.1  $\mu\text{m}$ .
6. An aqueous titanium oxide dispersion comprising chloride ion and a Brønsted base other than chloride ion, which is a dispersion of titanium oxide particles predominantly comprised of brookite titanium oxide particles having an average particle diameter of from 0.01  $\mu\text{m}$  to 0.1  $\mu\text{m}$  and a specific surface area of at least 20  $\text{m}^2/\text{g}$ .

7. The aqueous titanium oxide dispersion as claimed in any one of claims 1 to 6, wherein the content of titanium oxide particles in the aqueous titanium oxide dispersion is in the range of 0.05 mol/liter to 10 mol/liter.

8. The aqueous titanium oxide dispersion as claimed in any one of claims 1 to 7, which further contains from 10 ppm to 10,000 ppm of a water-soluble polymer.

9. The aqueous titanium oxide dispersion as claimed in any one of claims 1 to 8, which further contains an adhesive.

10. The aqueous titanium oxide dispersion as claimed in claim 9, wherein the adhesive is an alkyl silicate.

11. The aqueous titanium oxide dispersion as claimed in any one of claims 1 to 10 and claim 30, wherein the dispersion medium in the aqueous titanium oxide dispersion is water or a mixture of water and an organic solvent.

12. A titanium oxide thin film formed on a surface of a base material from the aqueous dispersion of titanium oxide particles as claimed in any one of claims 1 to 11.

13. The titanium oxide thin film as claimed in claim 12, wherein the base material is made of at least one substance selected from ceramics, metals, glass, plastics, paper and wood.

14. The titanium oxide thin film as claimed in claim 12, wherein the base material is made of at least one heat-resistant substance selected from ceramics, metals and glass, and the titanium oxide thin film has been calcined.

15. An article made by coating a surface of a base material with the aqueous dispersion of titanium oxide particles as claimed in any one of claims 1 to 11.

16. The article as claimed in claim 15, wherein the base material is made of at least one substance selected from ceramics, metals, glass, plastics, paper and wood.

17. A process for producing an aqueous dispersion of titanium oxide particles comprising chloride ion and at least one kind of Brønsted base other than chloride ion, characterized in that titanium tetrachloride is hydrolyzed in the presence of a solution containing at least one Brønsted base selected from the group consisting of nitrate ion, phosphate ion, pyrophosphate ion, metaphosphate ion, polyphosphate ion, methanesulfonate ion, ethanesulfonate ion, dodecylbenzenesulfonate ion and propanesulfonate ion.

18. (deleted)

19. The process for producing the aqueous titanium oxide dispersion as claimed in claim 17, wherein the content of chloride ion and the Brønsted base other than chloride ion is made to fall in the range of 50 ppm to 10,000 ppm as the total anion content in the aqueous titanium oxide dispersion.

20. A process for producing an aqueous dispersion of titanium oxide particles, characterized in that titanium tetrachloride is hydrolyzed in the presence of a solution comprising a Brønsted base, which is either one or both of nitrate ion and phosphate ion; and the content of chloride ion and the Brønsted base other than chloride ion is made to fall in the range of 50 ppm to 10,000 ppm as the total anion content in the aqueous titanium oxide dispersion.

21. A process for producing titanium oxide particles characterized by obtaining the titanium oxide particles from the aqueous titanium oxide dispersion prepared by the process as claimed in any one of claims 17, 19 and 20.

22. A process for producing an aqueous dispersion of titanium oxide particles comprising brookite titanium oxide particles, which comprises chloride ion and a Brønsted base other than chloride ion, characterized in that titanium tetrachloride is hydrolyzed in the presence of a solution containing at least one Brønsted base selected from the group consisting of nitrate ion, phosphate ion, pyrophosphate ion, metaphosphate ion, polyphosphate ion, methanesulfonate ion, ethanesulfonate ion, dodecylbenzenesulfonate ion and propanesulfonate ion.

23. (deleted)

24. The process for producing the aqueous brookite titanium oxide dispersion as claimed in claim 22, wherein the content of chloride ion and the Brønsted base other than chloride ion is made to fall in the range of 50 ppm to 10,000 ppm as the total anion content in the aqueous brookite titanium oxide dispersion.

25. The process for producing finely divided brookite titanium oxide particles, characterized by obtaining the titanium oxide particles from the aqueous brookite titanium oxide dispersion prepared by the process as claimed in claim 22 or claim 24.

26. A process for producing an aqueous dispersion of titanium oxide particles predominantly comprised of brookite titanium oxide particles, which comprises chloride ion and either one or both of nitrate ion and phosphate ion, characterized in that titanium tetrachloride is hydrolyzed in the presence of either one

or both of nitrate ion and phosphate ion at a temperature in the range from 75°C to the boiling point of an aqueous reaction solution.

27. The process for producing the aqueous dispersion of titanium oxide particles predominantly comprised of brookite titanium oxide particles, as claimed in claim 26, wherein the content of chloride ion and either one or both of nitrate ion and phosphate ion is made to fall in the range of 50 ppm to 10,000 ppm as the total anion content in the aqueous brookite titanium oxide dispersion.

28. A process for producing titanium oxide particles, characterized by obtaining titanium oxide particles predominantly comprised of brookite titanium oxide particles, from the aqueous titanium oxide dispersion prepared by the process as claimed in claim 26 or claim 27.

29. The process for producing the aqueous dispersion of titanium oxide particles as claimed in any one of claims 17, 19, 22, 24, 26 and 27, wherein the hydrolysis of titanium tetrachloride is carried out in a reaction vessel equipped with a reflux condenser.

30. An aqueous dispersion of titanium oxide particles containing chloride ion and a Brønsted base other than chloride ion, and further containing a binder comprising an alkyl silicate.

31. An article having a photo-catalytic activity, comprising a titanium oxide thin film formed on a surface of a base material with an aqueous dispersion of titanium oxide particles comprising chloride ion and at least one Brønsted base selected from the group consisting of pyrophosphate ion, metaphosphate ion, polyphosphate ion, methanesulfonate ion, ethanesulfonate ion,

dodecylbenzenesulfonate ion and propanesulfonate ion, wherein the titanium oxide particles have an average particle diameter of from about 0.01  $\mu\text{m}$  to about 0.1  $\mu\text{m}$ .

32. The article according to claim 31, wherein the content of chloride ion and the Brønsted base is in the range of about 50 ppm to about 10,000 ppm as the total anion content in the aqueous titanium oxide dispersion,

33. The article according to claim 31, wherein the content of titanium oxide particles in the aqueous titanium oxide dispersion is in the range of about 0.05 mol/liter to about 10 mol/liter.

34. The article according to claim 31, wherein the aqueous titanium oxide dispersion further contains from about 10 ppm to about 10,000 ppm of a water-soluble polymer.

35. The article according to claim 31, wherein the aqueous titanium oxide dispersion further contains an adhesive.

36. The article according to claim 35, wherein the adhesive is an alkyl silicate.

37. An article having a photo-catalytic activity, comprising a titanium oxide thin film formed on a surface of a base material with an aqueous dispersion of titanium oxide particles comprising chloride ion and a Brønsted base selected from the group consisting of nitrate ion, phosphate ion, pyrophosphate ion, metaphosphate ion, polyphosphate ion and an organic acid ion, which is a dispersion of titanium oxide particles comprising at least 70% by weight of brookite titanium oxide particles having an average particle diameter of from about 0.01  $\mu\text{m}$  to about 0.1  $\mu\text{m}$  and a specific surface area of at least about 20  $\text{m}^2/\text{g}$ .

38. The article according to claim 37, wherein the Brønsted base is at least one ion selected from the group consisting of nitrate ion and phosphate ion.

39. The article according to claim 37, wherein the content of titanium oxide particles in the aqueous titanium oxide dispersion is in the range of about 0.05 mol/liter to about 10 mol/liter.

40. The article according to claim 37, wherein the aqueous titanium oxide dispersion further contains from about 10 ppm to about 10,000 ppm of a water-soluble polymer.

41. The article according to claim 37, wherein the aqueous titanium oxide dispersion further contains an adhesive.

42. The article according to claim 41, wherein the adhesive is an alkyl silicate.

43. An article having a photo-catalytic activity, comprising a titanium oxide thin film formed on a surface of a base material with an aqueous dispersion of titanium oxide particles comprising chloride ion and a Brønsted base selected from the group consisting of nitrate ion, phosphate ion, pyrophosphate ion, metaphosphate ion, polyphosphate ion and an organic acid ion, and further containing a binder comprising an alkyl silicate.

44. The article according to claim 31, wherein the article is selected from the group consisting of lighting equipment, architectural glass and wall material.

45. The article according to claim 37, wherein the article is selected from the group consisting of lighting equipment, architectural glass and wall material.

46. The article according to claim 43, wherein the article is selected from the group consisting of lighting equipment, architectural glass and wall material.
47. The article according to claim 31, wherein the article is a catalyst.
48. The article according to claim 37, wherein the article is a catalyst.
49. The article according to claim 43, wherein the article is a catalyst.
50. The article according to claim 31, wherein the base material comprises alumina or zirconia.
51. The article according to claim 37, wherein the base material comprises alumina or zirconia.
52. The article according to claim 43, wherein the base material comprises alumina or zirconia.